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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/825,087	04/02/2001	Cem Basceri	MI22-1483	1701
21567	7590	09/10/2004	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			TALBOT, BRIAN K	
			ART UNIT	PAPER NUMBER
			1762	
DATE MAILED: 09/10/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/825,087	Applicant(s) BASCERI ET AL.	
	Examiner Brian K Talbot	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 40-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 55-58 is/are allowed.
- 6) ☒ Claim(s) 1-21 and 40-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/23/04 has been entered.
2. Claims 1-21 and 40-58 remain in the application.
3. In light of the response filed 6/23/04, the 35 USC 112 second paragraph rejection of claim 56 has been withdrawn.
4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Allowable Subject Matter

5. Claims 55-58 are allowable.

The following is a statement of reasons for the indication of allowable subject the prior art fails to teach or fairly suggest forming capacitor-to-plate dielectric interface comprising a first

Art Unit: 1762

capacitor plate of Pt or Ru on a semiconductive substrate, an interface layer consisting of the claims materials formed by chemisorption on the first capacitor plate and a second capacitor plate atop the interface layer.

Claim Rejections - 35 USC § 103

6. Claims 1-21 and 40-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suntola et al. (4,058,430) (a) alone or (b) in combination with Yu et al. (6,241,821 B1) or Marscher (4,109,031).

Suntola et al. (4,058,430) teaches forming a compound film whereby a substrate is subjected to a vapor of a first element at a temperature to form a single atomic layer thereon, the a vapor of a second element is introduced to form a second atomic layer atop the first atomic layer. This is repeated until a desired thickness is achieved and then the layers are heated to form the compound film (see abstract and col. 6 - col. 7). Suntola et al. (4,058,430) teaches partial coverage can be achieved of the first element on the substrate and then forming the second element (col. 9, lines 20-60 and claim 7).

Suntola et al. (4,058,430) fails to teach forming a first element layer and a second element layer surrounding or sandwiching the compound layer (interlayer).

(a) While the Examiner acknowledges the fact that the reference is silent upon forming the compound layer between two layers, it is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving similar

Art Unit: 1762

results regardless of whether or not the compound layer was formed on a substrate or on a deposited film.

(b) Yu et al. (6,241,821 B1) teaches forming single atomic layer interface layers between two layers. The interface layer can be comprised of Si, O, and a metal. A layer of BaO or SrO can be applied to a substrate prior to the interface layer being applied thereto and a subsequent layer can be applied to the interface layer. The interface layer is applied by chemisorption. (col. 2, line 15 – col. 4, line 40).

Marscher (4,109,031) teaches forming gradient layer between metal and ceramic layers which are comprised of 100% metal adjacent the metal to 100% ceramic with variations throughout the interlayer with an increase in ceramic material the more further away from the metal (col. 1, lines 10-30 and col. 2, lines 22-60). While the Examiner acknowledges the fact that Marscher (4,109,031) does not disclose chemisorption for the depositing layers, it is the Examiner's position that the use of gradient layer between different materials to alleviate the differences in thermal expansion/stresses upon subsequent heating would be achieved regardless of what technique was utilized to form the layers. In addition, some of the claims recite the first material being metal (Pt or Ru) and the second material being a metal oxide (TaO or titanates) which are similar to the materials disclosed in Marscher (4,109,031).

Therefore, it would have been obvious at the time the invention was made to have modified Suntola et al. (4,058,430) process by performing the chemisorption layer between layers as evidenced by Yu et al. (6,241,821 B1) because of the expectation of achieving similar success.

Art Unit: 1762

7. Claims 1-21 and 40-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al (6,570,253).

Lim et al (6,570,253) teaches a multi-layer film for capacitor structures. A multi-layer film includes a compositional transition layer between a lower material layer and an upper material layer formed of different materials. The compositional transition layer comprise materials form both the first and second layers (abstract). The compositional transition layer can be more than one layer depending upon the cycling of the reaction deposition process (col. 7, lines 20-35 and Figs. 6,7).

Lim et al (6,570,253) fails to teach that the transitional layer improves adhesion between the first and second layers.

While Lim et al (6,570,253) fails to explicitly teach an improvement in adhesion, it is the Examiner's position, that not only would there be an improvement in adhesion between the layers the use of gradient layers is well known to alleviate the differences in thermal expansion/stresses upon subsequent heating would be achieved regardless of what technique was utilized to form the layers.

Response to Amendment

8. Applicant's arguments filed 6/23/03 have been fully considered but they are not persuasive.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brian K Talbot
Primary Examiner
Art Unit 1762

BKT